

Recurring vomiting, skin discolouration: the easily overlooked thermal element of cannabinoid hyperemesis syndrome

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DESCRIPTION

A 27-year-old woman presented with a 1-week history of intractable nausea and vomiting. These had been recurring symptoms over an 18-month period. Her symptoms were initially attributed to acute cholecystitis, based on her epigastric pain, vomiting and a positive sonographic Murphy's sign, resulting in a laparoscopic cholecystectomy. It is possible a positive sonographic Murphy's sign was reported then, as the patient likely reacted to probe pressure given her severe abdominal discomfort from vomiting. Subsequently, with symptom recurrence, the patient underwent upper gastrointestinal endoscopies on three occasions at various hospitals and had an endoscopic retrograde cholangiopancreatography which found no acute pathology.

On this admission, she endorsed intractable vomiting with inability to tolerate oral intake. Physical examination revealed a fatigued-appearing, dehydrated woman. Abdominal examination revealed gross skin discolouration ([figure 1](#)). The patient attributed this to regular use of a heating pad which alleviated her symptoms.



Figure 1 Skin discolouration secondary to burn injuries from heat therapy.

The patient's medical history was revisited where she revealed that prior to using heating pads, her symptoms were alleviated by warm showers. However, she got scalded from warm water on several occasions, after falling asleep on the shower floor. The patient hesitantly revealed a long-standing history of daily recreational marijuana use. Medical records from her initial presentation with surgical intervention and various hospitalisations revealed urine drug screen positive for cannabinoid on various occasions. She was diagnosed with cannabinoid hyperemesis syndrome (CHS) and chronic abdominal burns secondary to heat therapy and advised that marijuana-use cessation is paramount in resolution of her symptoms.

CHS is characterised by cyclic episodes of nausea and vomiting in patients with chronic, high-dose cannabis use.¹ The site of action of cannabis includes the CB1 and CB2 cannabinoid receptors, found in the central and enteric nervous system.² It is hypothesised that the activation of CB1 receptors in the GI tract leads to relaxation of the lower oesophageal sphincter, decreased GI motility and gastric emptying, precipitating hyperemesis.³ An alternate hypothesis is stimulation of the CB1 receptors in the splanchnic vasculature provoking venodilation with congestion, which manifest with symptoms of nausea, vomiting and abdominal pain.⁴

A pathognomonic characteristic of CHS, with 92% of affected patients reporting, compulsive hot showers and baths for symptom relief.¹ Many of these patients present to the emergency department with scalding injuries from use of water with very high temperatures.⁵ The exact mechanism by which hot showers provide relief from CHS remains unclear. As CB1 receptors are found in the hypothalamus, it is hypothesised that warm temperatures correct the cannabis-induced disequilibrium at the thermoregulatory centres, which could explain compulsive hot bathing.³ Heat therapy with warm showers also promotes vasodilation on the skin, which causes a redistribution of congested blood from the gut with diversion to the skin, 'cutaneous steal syndrome', relieving splanchnic congestion which alleviates symptoms.⁴

Diagnostic characteristics for CHS include severe cyclic vomiting usually accompanied by abdominal pain, symptom onset preceded by at least weekly marijuana use, temporary relief of symptoms with hot bathing and resolution of symptoms with cannabis cessation.¹ Supportive features include male gender, cannabis use onset in the teenage



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years and symptom onset in the third decade of life.¹ Symptom management in the acute phase is supportive with fluid resuscitation as needed, dopamine antagonist, topical capsaicin cream to the abdomen and avoidance of narcotic pain medications.^{6,7} Definitive treatment of CHS is abstinence requiring cannabis cessation.⁸

CHS is an easily overlooked diagnosis and the thermal element of the syndrome is less explored. This case highlights the risk of burn injuries in patients with CHS and the morbidity associated with a delay in diagnosis as this patient likely underwent an unnecessary surgical procedure and repeated diagnostic investigations. A detailed history of symptom occurrence and recreational drug use is paramount as a delay in diagnosis can result in expensive medical testing, hospitalisations for symptom management and costly and at times unnecessary interventions.⁹

Patient's perspective

I tried to quit, but I can't, are you sure it's the weed?
I was vomiting so much one time I got in the bathtub and ended falling asleep and burning up my skin.

Learning points

- ▶ To highlight and discuss the thermal component of cannabinoid hyperemesis syndrome.
- ▶ To highlight an easily overlooked diagnosis that can result in extensive, expensive and unnecessary testing, interventions and procedures.
- ▶ To highlight a common cue to the diagnosis—heat therapy in various forms and the associated risk involved.

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REFERENCES

- 1 Sorensen CJ, DeSanto K, Borgelt L, *et al*. Cannabinoid hyperemesis syndrome: diagnosis, pathophysiology, and Treatment—a systematic review. *J Med Toxicol* 2017;13:71–87.
- 2 Sharkey KA, Darmani NA, Parker LA. Regulation of nausea and vomiting by cannabinoids and the endocannabinoid system. *Eur J Pharmacol* 2014;722:134–46.
- 3 Galli JA, Sawaya RA, Friedenber FK. Cannabinoid hyperemesis syndrome. *Curr Drug Abuse Rev* 2011;4:241–9.
- 4 Patterson DA, Smith E, Monahan M, *et al*. Cannabinoid hyperemesis and compulsive bathing: a case series and paradoxical pathophysiological explanation. *J Am Board Fam Med* 2010;23:790–3.
- 5 Allen JH, de Moore GM, Heddle R, *et al*. Cannabinoid hyperemesis: cyclical hyperemesis in association with chronic cannabis abuse. *Gut* 2004;53:1566–70.
- 6 Hickey JL, Witsil JC, Mycyk MB. Haloperidol for treatment of cannabinoid hyperemesis syndrome. *Am J Emerg Med* 2013;31:1003.e5–1003.e6.
- 7 Lapoint J. Case series of patients treated for cannabinoid hyperemesis syndrome with capsaicin cream. *Clin Toxicol* 2014;52:707.
- 8 Wallace EA, Andrews SE, Garmany CL, *et al*. Cannabinoid hyperemesis syndrome: literature review and proposed diagnosis and treatment algorithm. *South Med J* 2011;104:659–64.
- 9 Perrotta G, Miller J, Stevens T. Cannabinoid hyperemesis: relevance to emergency medicine. *Acad Emerg Med* 2012;19:S286–S287.

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